

VII.—*Notice of an Extraordinary Fish.* By H. PIDDINGTON, Esq.

The following notices of a new and monstrous fish may probably be worth recording in the Journal. They do not altogether agree with those of the fish described in your January No., by Lieut. FOLEY, but there may be more than one species of these monsters.

In December, 1816, I commanded a small Spanish brig, and was lying at anchor in the Bay of Mariveles, at the entrance of the Bay of Manilla. One day, about noon, hearing a confusion upon deck, I ran up, and looking over the side, thought, from what I saw, that the vessel had parted, and was drifting over a bank of white sand or coral, *with large black spots*. I called out to let go another anchor, but my people, Manilla men, all said, “No Sir! its *only* the *chacon*!” and upon running up the rigging, I saw indeed that I had mistaken the motion of the spotted back of an enormous fish passing under the vessel, for the vessel itself driving over a bank! My boatswain (*contramestre*), a Cadiz man, with great foolhardiness jumped into the boat with four men, and actually succeeded in harpooning the fish! with the common dolphin-harpoon, or *grains*, as they are usually called, to which he had made fast the deep-sea line; but they were towed at such a fearful rate out to sea, that they were glad to cut from it immediately.

From the view I had of the fish, and the time it took to pass slowly under the vessel, I should not suppose it less than 70 or 80 feet in length. Its breadth was very great in proportion; perhaps not less than 30 feet. The back so spotted, that, had it been at rest, it must have been taken for a coral shoal, the appearance of which is familiar to seamen. I did not distinguish the head or fins well, from being rather short-sighted, and there being some confusion on board.

As my people seemed to look upon “the *chacon*,” as they called it, almost in the light of an old acquaintance, which indeed it was to many of them who had served in the Spanish gun-boat service, I made many inquiries of them, of which the following is the result.

1. That there were formerly *two* of these monsters, and that they *lived* (*tenian su casa*) in a cluster of rocks, called Los Puercos, at the S. W. entrance of the Bay of Mariveles; but that, about ten or fifteen years before this time, or say in 1800, one was driven on shore, and died close to the village in the bay; the inhabitants of which were compelled by the stench to abandon their houses for a time.

2. That the remaining one frequented the bay of Mariveles and that of Manilla, and it was supposed, that it often attacked and destroyed small fishing boats, which never appeared after going out to fish,

though no bad weather had occurred. This last account I afterwards found singularly corroborated.

3. That it was considered as dangerous by the Spanish gun-boats; that they always when there kept a swivel loaded, the report of which, they said, drove it away. My principal informant was a man employed as a pilot for the ports in the Phillipine Islands, whither I was bound, who had passed his whole life in the gun-boats. He said that one instance of its voracity occurred when he was present. A man, who was pushed overboard in the hurry to look at the monster, being instantly swallowed by it.

4. The native fishermen of the Bay of Manilla quite corroborate this account, and speak of the monster with great terror.

About 1820 or 1821, an American ship's boat, with an officer and few men, was proceeding from Manilla to Cavite; but, meeting with a severe squall and thick weather, they were driven nearly into the middle of the bay. They were pulling in what they thought the best direction, when on a sudden the sailors all dropped their oars! But the mate, who was steering, looking astern of the boat, saw the open jaws of a huge fish almost over him! Having nothing at hand, he threw the boat's tiller into the mouth of the fish! shouting as loud as possible; when, the jaws closing with a tremendous crash, the whole fish, which they described to be more like a *spotted whale*! than anything else, dived beneath the boat, and was seen no more. I do not now recollect the names of the ship, or of the captain, but I thought the circumstance of the *spotted* appearance a remarkable proof that the story was not an invention. "We do not like to tell it," said the American Captain, "for fear of being laughed at; but my officer is quite trust-worthy, and we have learnt from the fishermen too, that there is some strange species of large fish highly dangerous to their boats."

Like the American officer, I fear almost being laughed at, were it not that, could we collect more facts relative to these strange monsters, they might perhaps at least explain some of the "coral spots," so often mentioned in our charts*: independent of its being a matter of great interest to the naturalist. I therefore add here a vague notice of monstrous *spotted* fish, which are known in the Moluccas.

These are called by the fishermen of Ternate, Celebes, &c. a "*Ikan Bintang*," (or star-fish,) from the bright light which they occasion, and by which they are recognised at great depths at night, in calm weather. The Malay fishermen describe them too as *spotted*, as large as a whale,

* HORSBURGH alludes to shoals of Devil fish. *Lophius* being perhaps mistaken for shoals.

and highly destructive of their nets ; which they instantly take up when they see the fish, if they can get time to do so ; for it is known to destroy boats, and whole lines of nets and fishing stakes, if it once becomes entangled amongst them, to the ruin of the poor fishermen. I had the same account corroborated at the Soolo Islands, both by Malay and by Chinese fishermen ; as also at Zebù, in the Phillippine Islands. At Soolo I was shewn large quantities of the skin of a spotted fish, cut into pieces and dried, for sale to the Chinese junks, which my people said was the skins of young “*chacons*”—“*Pero no son estos como nuestro chacon de allá, Señor.*” “*But these are not like our chacon yonder, Sir,*” was always added. This skin I should have called that of a spotted shark* : the tubercles were excessively coarse and rough.

It seems thus certain, that some immense *spotted* fish, of highly destructive propensities, resembling in this respect the gigantic shark of the West-Indies, (which is often known to attack and devour the negroes in their canoes, and recently even a man and boat in Boston Bay,)† exists in the seas of the Eastern Archipelago. It is difficult to say, whether the one seen by Lieut. FOLEY was an individual of the same species or not. As already stated, I was unable to see mine with sufficient distinctness, to ascertain any thing beyond its enormous size, great breadth, and spotted appearance. I add such conjectures as my limited knowledge and confined means of reference have enabled me to collect : I offer them only *as* conjectures.

We look naturally, from the voracious habit of these monsters, amongst the Rays or Sharks—*Squalus* and *Raja*—for something to throw light upon what they may be ; and it appears that, though these two genera have been classed by BROUSSONNET, BLOCH, and LACEPE`DE, there is still much uncertainty existing as to some of the known species, “*which may be placed indifferently in either genus, for the distinctive characters of the Rays are derived from the flatness of their bodies, and those which are least flattened, and the squalæ which are so in some degree, approach much to each other.*”—Bosc in *Nouveau Dict. Hist. Nat. Art. Squale*. As to their size, the largest individual which has been subjected to trust-worthy measurement seems to be that mentioned by LACEPE`DE ; a *Squalus maximus*, driven on shore near St. MALO ; which was thirty-three feet long, and twenty-four in circumference ; but this is far surpassed by the size of those of which, in Europe at

* The tiger shark seems to be rather a *striped* than a spotted shark.

† That some of them are sufficiently formidable, we have lately had evidence. In Boston Bay, a man was recently attacked in his boat, and devoured by one of these animals.—*Encyclopædia Americana, Art. Shark, 1832.*

least, only the fossil remains are found. Bosc, speaking of the *SQUALE ROUSSETTE*, *Squalus catulus et canicula*, LINN., says of the fossil teeth, "There is in the museum of Natural History at Paris, a tooth, an inch and ten lines long, and two inches nine lines broad; which according to a very moderate calculation, by LACEPE`DE, must have belonged to an individual fifty feet in length! *Art. Squale*, and in another place he says, *Art. Requin*,"—

"The length of the front teeth of a shark thirty feet long is about two inches, and their breadth at the base two and a half; but there is shown at the Museum Nat. His. at Paris, a petrified shark's tooth, found at Dax, near the Pyrenees, which is, also, exclusive of the root, nearly four inches long. The animal to which it belonged must then have been more than sixty feet in length! (LACEPE`DE, from an unquestionable calculation, estimates it at seventy-one feet! and that the jaws were nine feet in diameter!") The authority of LACEPE`DE is so high, that we may fairly conjecture the question of size to be so far set at rest, that Lieut. FOLEY and myself will be acquitted of any exaggeration; and the fact of their swallowing boat and fishermen too, is farther confirmed by BLOCH, (a good authority,) who says, speaking of the preference given by the sharks to putrid flesh, that "the Greenlanders, who frequent a sea abounding in sharks, in little canoes made of the skin of this fish, are careful to make as little noise as possible, to avoid the chance of being swallowed *together with their boat* by these monsters." Its colour is the next remarkable circumstance, and it is worth noticing, that in this all parties agree. The dorsal fin mentioned by Lieut. FOLEY and the lizard-like head I am unable to speak to. It is quite possible however that there may be a genus of these monsters which have the head far less flattened than in general. *Raja rhinobatus*, which seems to connect the two genera has the snout lengthened.

I suspect the name *chacon* to be a West Indian (Carib or African) one for a shark. I do not find it in any Spanish Dictionary, and I am not aware that it is derived from any of the dialects of the Phillippine Islands. We may hope that ere long some of our whalers may meet with one of these monsters, and thus enable naturalists to form some judgment of what they are. It would be a highly interesting circumstance could we procure some of the teeth, and these should be found to correspond with those at Paris. Perhaps some of your Singapore readers may be enabled to furnish us with more information from the Malay fishermen, if the *Ikan Bintang* is known in those seas.

I had just finished this paper, when I received from my friend Dr. HARLAN, of Philadelphia, the first number of the Transactions of the

Geological Society of Pennsylvania, in which is a most interesting "Critical notice of various organic remains discovered in North America," by Dr. HARLAN. At p. 89, is the following :

"The bones of one species of shark, upwards of forty feet in length, allied to the *Carcharias*, have occasionally been found in several localities. In CUVIER'S Theory of the Earth, by S. L. MITCHELL, p. 400, it is stated, 'The skeleton of a huge animal was found on the bank of the Meherrin river, near Murfreesborough, N. C. It was dug out of a hill distant sixty miles from the ocean. Captain NEVILLE and Dr. FOWLER, who visited the spot, gathered the scattered vertebræ and laid them in a row thirty-six feet in length. If to this the head and tail be added, the animal must have been fifty feet or more in length, &c. We have recognized them as the remains of a gigantic species of shark.'"

He refers to other specimens, indicating sharks of forty feet or more in length ; but this will, I doubt not, be sufficient to show that it is quite probable the fish seen by Lieut. FOLEY and the *chacon* of the Bay of Manilla may be individuals of the same family as those only known to us as yet by their fossil remains.

IX.—*Rules for Calculating the Lengths of the Drop-bars of Suspension Bridges, the Length and Deflection of the Chain, Rise of the Roadway, &c. By Captain J. THOMSON, Engineers.*

The application of the following problem in statistics, to find the length of the drop-bars and links of a suspension bridge, has, I believe, the merit of originality ; while it will be found extremely convenient in practice, in determining at once the requisite proportions, and obviating the necessity of after adjustment, which will always occur where the curve of such a bridge is assumed as a true catenarian.

If a be the angle of suspension,

b the length in feet of one of the links of the chain,

d the number of drop-bars in each chain ; then the tangent of the

angle a , divided by one-half $d = n = \frac{2 \text{ Tan. } a}{d}$ is the constant dif-

ference between the tangents of the angles formed by the links of the chain with the horizon. These tangents will be as follows : upper link = $\text{Tan. } a$, 2nd = $\text{Tan. } a - n$, 3rd = $\text{Tan. } a - 2n$ &c. and the lowest

= $\text{Tan. } a - \frac{d}{2} n$. The sines to radius b , corresponding to these

angles, are the differences of the lengths of the drop-bars ; and the cosines of these angles are the horizontal distances between the drop-